



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,387	11/14/2003	Diyun Huang	14414-014001	3949
26191	7590	05/13/2005	EXAMINER	
FISH & RICHARDSON P.C. PO BOX 1022 MINNEAPOLIS, MN 55440-1022			TRUONG, DUC	
			ART UNIT	PAPER NUMBER
			1711	

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/714,387

Applicant(s)

HUANG ET AL

Examiner

Duc Truong

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 30-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 032904.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claims 30-39 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on March 30, 2005.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-29 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lau et al (6,313,185) in view of Mandal et al (5,484,821) both of record on 1449.

The Lau reference discloses materials fabricated from polymers having reactive groups used in cross-linking in that the reactive groups in the backbone are included in a conjugate system. Especially polymeric strands comprise a poly(arylene ether) synthesized from a fluoroaromatic portion and an aromatic bisphenol portion in that the difluoroaromatic portion of the poly(arylene ether) are modified in such a way some difluoroaromatic portions carry a thermolabile portion related to crosslink (see Abstract and in the Figures).

Note that the polymers are suitable for use in electronic devices (see col. 1, lines 14-52).

Note that in Figure 7, the reference does disclose a synthetic scheme for producing a tetracyclone containing poly(arylene ether).

Note that also in Example 3, the reference does disclose general reaction conditions for grafting a thermally labile component to a polymeric strand, in which 4-fluoro 4'-hydroxybenzene is reacted with ethylene glycol-poly(caprolactone) to produce 4-fluorobenzophenone endcapped thermolabile polymer which can then be incorporated into a poly (arylene ether) together with an aromatic bisphenol compound (see cols 13-14, Examples 2-3).

The disclosure of the reference differs from the instant claims in that it does not disclose the repeat unit of formula in claim 1 nor the use of a nonlinear optical chromophore having the structure D-TLA in the claimed composition.

However, The Lau reference does disclose the reaction product of a difluoroaromatic component with an aromatic bisphenol then with another component for cross-linking. Further, the reference does disclose a thermostable polymer is blended with a thermolabile polymer in that the blended mixture is then cross-linked and the thermolabile portion thermolyzed (see col. 1, last paragraph) in that the thermolabile polymer is not defined, to form a photo-crosslinked product, a film.

The Mandal reference discloses a photocrosslinkable polymeric system has been developed for processing into films comprises a crosslinked nonlinear optical polymer comprising a linear host polymer and a non-linear optical crosslinking agent (see Abstract and in claim 1) in that the linear host polymer component includes a copolymer (see claim 8).

The reference further discloses that the nonlinear optical polymer is photocrosslinked (see claim 11) and having the structure D-TLA (see col. 4, lines 8-25), as in the claims.

Therefore, it would have been obvious to one of ordinary skill in the art to select the molar ratio of difluoroaromatic and aromatic bisphenol components within the limitations of the instant claims (2/1) before reacting with an endcapped thermolabile polymer, as disclosed in Mandal et al., in order to gain the advantages of the combination of the references, that being a photocrosslinkable polymeric system has been developed for processing into films having stable second order nonlinear optical properties.

Lau reference discloses materials fabricated from polymers having backbones with reactive groups used in crosslinking.

The disclosure of Mandal provides evidence that the films can comprise second order nonlinear optical polymers to form photocrosslinkable polymeric system.

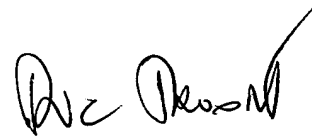
The replacement of any crosslinked components by the use of a nonlinear optical chromophore having the structure D-TLA to have the added property would not provide an unexpected results to one of ordinary skill in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Truong whose telephone number is 571-272-1081. The examiner can normally be reached on Monday-Friday.

Art Unit: 1711

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



DUCTRUONG
PRIMARY EXAMINER